

Indian Maritime University				
June 2024 End Semester Examinations				
B.Tech (Marine Engineering)				
Marine Electrical Technology				
UG11T3603				
Max Marks : 70		Pass Marks : 35		
Duration : 03 Hours		Date: 14.06.2024		
Part A (Part A is Compulsory)				
Q1 [10 x 1 = 10 Marks] Multiple Choice Questions		Options		
(i) An electric tachometer receives the engine speed signal from a _____.	small generator mounted on the engine	bimetallic sensing device	stroboscopic sensing device	vibrating reed meter generating a voltage proportionate to engine speed
(ii) According to Regulations , the talking and calling circuits of a sound powered telephone system must be _____.	intrinsically safe	independent of each other	independently grounded	connected to a common ground
(iii) The emergency electrical power source on tank vessels over 500 GT on an international voyage, should be capable of continuous operation under emergency load for _____.	6 hours	12 hours	18 hours	24 hours
(iv) Which of the following statements concerning electrical cables is correct?	Where they pass through watertight bulkheads, they should be fitted with watertight stuffing boxes.	Electric cable coverings should never be grounded.	Electrical cables must be rigidly held in place by welding of armored cable, or glued in place where nonmetallic insulation is used.	All of these.
(v) In an AC synchronous motor electric propulsion plant, propeller speed is controlled by varying the _____.	prime mover speed	electric coupling field strength	number of energized main motor poles	propulsion generator field strength
(vi) Protection against sustained overloads occurring in molded-case circuit breakers is provided by a/an _____.	overvoltage release	thermal acting trip	thermal overload relay	over-current relay
(vii) What will be the phase angle relationship of a six-pole, three-phase, rotating field generator?	60°	120°	180°	360°
(viii) A three-phase, induction-type motor experiences an open in one phase. Which of the listed automatic protective devices will prevent the machine from being damaged?	Overspeed trip	Thermal overload relay	Three-pole safety switch	Magnetic blowout coil

(ix) The part of the shipboard electrical system used to control the distribution of power to the branch circuits, is the	bridge control panel	disconnect links	governor relay box	main switchboard
(x) Regulations require that lighting fixture globes must be protected by guards if the fixtures are located in the _____.	steering gear room	galley	living quarters	wheelhouse

Q2 [2 x 5 = 10 Marks] - Short Answer Type Questions

- (i) Why is AC power preferred on-board ship than DC power?
- (ii) State the advantages of Azipod System.
- (iii) What do you mean by I.P. (ingress protection) code with regard to motor enclosure?
- (iv) Write a note on "Preferential Trips on Ship".
- (v) Differentiate between Arc flash & Arc blast.

Part B (Answer any Five out of Seven) Each Question is for 10 Marks

- Q3.** Using a neat sketch, elucidate the operation of a Brushless Generator on board a ship, emphasizing the significance of an AVR in the circuit.
- Q4.** With a neat diagram explain the method of supplying emergency power on-board a ship.
- Q5 a.** Discuss the working of rudder angle indicator with a neat diagram. (6 Marks)
b. Comment on Engine Room Telegraph. (4 Marks)
- Q6 a.** Draw a typical sketch of Ship's electrical distribution System. (4 Marks)
b. How will you measure the insulation resistance of a 3-phase induction motor? (6 Marks)
- Q7 a.** Illustrate shaftline and pod propulsions. (5 Marks)
b. Elaborate the difference between intrinsically safe and flameproof equipment? (5 Marks)
- Q8.** Discuss in detail the working of SF6 circuit breaker with a neat sketch.
- Q9.** What do you mean by Electrical survey on-board ship? Discuss the electrical survey procedure for UMS operation and for navigational light indicator.